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INDIGENOUS HEALING PRACTICES

Contributions From Aboriginal Australian Psychology: Songlines, Memory, and Relational Knowledge Systems

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This collaboration between an Aboriginal and non-Aboriginal Australian scholar explores a simple but important contention: that human memory is not stored in the brain alone but shaped through ongoing relationship with land. Aboriginal Australian traditions demonstrate that memory is carried and passed through natural systems, with the aid of story, song, and sacred sites. We explore how such place-based cultural memory practices integrate locatedness, relatedness, embodiment, orality, narrative, and imagery. Through these means, the practices give rise to songlines—narrative pathways that do not merely store information but activate knowledges, forming a living map that connects people, place, and understanding. We also explore parallels and distinctions with the classical method of loci or memory palace, which uses spatial orientation as a mnemonic aid. While long assumed to originate in ancient Greece, we show that place-based memory practices in Aboriginal Australia precede this by at least 50,000 years. This exploration contributes to understanding Indigenous knowledge transmission and offers insight into how human memory is held, embodied, and shared.

This collaboration between an Aboriginal and non-Aboriginal Australian scholar explores a simple but important contention: that human memory is not stored in our brains alone, but rather—as Aboriginal Australian traditions demonstrate—that memory is carried and passed through natural systems, with the aid of story and song in intimate relationship with sacred sites. We explore these place-based memory practices, narrative pathways, and songlines. By understanding how these practices unify locatedness, relatedness, embodiment, orality, narrative, and imagery, we can come to appreciate how these technologies function not merely to store information but, more critically, to activate knowledges—forming a living map that connects people, place, and understanding.

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As we demonstrate, Indigenous knowledges are *located*: it is within relationship with landscape and non-human others that Aboriginal cultural knowledge, meaning, and memory are stored. These knowledges are embedded in tangible cultural practices—drawing upon objects, landscapes, ritual, and ceremony—as forms of embodied, haptic, and distributed cognition. Memory is also encoded in language, specifically orality—a tradition that retains sensuous contact with the world through its integration of place-, body-, and sound-based expression. These knowledges are grounded in intertwined networks that depend upon narrative practices such as yarning—a structured cultural activity and rigorous methodology for knowledge production and transmission. Symbols and pattern-based imagery serve as mnemonic devices in the elaboration and transmission of these narratives, encoding knowledge in supra-rational ways.

We also explore the parallels and distinctions between these Indigenous memory practices and the globally recognised classical memory technology known as the *method of loci*, or *memory palace*, which similarly involves the use of spatial orientation as a mnemonic aid. Until recently, there was a tacit assumption that this method originated in ancient Greece. In fact, as we illustrate, place-based memory practices as found in Aboriginal Australia preceded the existence of Greece by at least 50,000 years. Unlike the method of loci, however, Indigenous memory practices have broader and more complex functions than just information storage. They activate knowledges embedded in and transmitted through natural systems, using ritual, story, and song. Moreover, beyond rote memorisation, these practices serve to renew our relationship with the more-than-human, sensuous world.

This exploration of songline stories and ancient oral traditions, which are carefully stewarded by Aboriginal Australian peoples, may advance understanding of Indigenous knowledge transmission systems and offer vital contributions to understanding how human knowledge is held, embodied, and shared.

Aboriginal Australian Memory Technologies

In Aboriginal Australian traditions, memory is carried and passed on through natural systems, through stories, song, and sacred sites embedded in the landscape. These narrative pathways are often referred to as songlines forming a living map that connects people, place, and knowledge. As we will show, such encoding lays the foundations for maps of memory and human cognition more broadly; cognition being in large part based on spatial and navigational neural processes (Dowie & Tempone-Wiltshire, 2022; Turnbull, 1997). To make this argument, we turn first to the subject of memory and memory training across cultural traditions.

Among the most widely known classical memory techniques is the memory palace, a mentally constructed space—often modelled on a familiar building—where specific pieces of information are assigned to distinct locations. This technique is a particular application of the broader technology known as the method of loci, a mental technology that involves using spatial

orientation as a mnemonic aid. By anchoring information to features within an imagined environment, learners harness the precision of spatial memory to support the accurate recall of complex details.

Australian scholar Lynne Kelly has shown that place-based memory systems developed independently in many cultures around the world. While Kelly is a non-Indigenous scholar, her work has been developed in close consultation with Aboriginal Elders and has received strong community support (Kelly, 2016). This distinguishes her contribution from earlier anthropological models that often abstracted cultural practice from community relationships. In her works *The Memory Code* (2016) and *First Knowledges Songlines: The Power and Promise* (Neale & Kelly, 2020), Kelly explores the way systems for the encoding, transmission, and protection of essential knowledge were developed by multiple cultures long before the advent of alphabetic writing. Many human societies have generated memory systems tied to place and culture. These include quipu devices in South America and ceremonial earthworks built by early peoples in Europe and North America. In the Aboriginal Australian context, Kelly (2016) highlights that the use of material artefacts and sacred sites for memory retention has been closely integrated with oral traditions, particularly those grounded in story and song.

To date, North American scholars have explored Indigenous memory techniques, both in terms of their utilisation within specific cultures, such as the Apache (Basso, 1996) or Zuni (Tedlock, 1971), across particular ecological regions, such as the Pacific Northwest (Turner, 2014), and in relation to certain socioeconomic milieus, e.g., hunter-gatherer cultures globally (Scalise Sugiyama, 2021). In this article we consider, specifically, the significance of Aboriginal Australian precursors to such place-based memory techniques, moving beyond existing scholarship by beginning to articulate some of the epistemic and metaphysical functions served by these technologies. While these cultural practices may be labelled "memory techniques", this is a problematic simplification, as they provide significantly more than that memory aid. These practices are not just techniques, they are embodied technologies woven into the developmental journey of how young people grow, learn, and assume the responsibilities of adulthood in community. These practices are intimately connected to Aboriginal ways of knowing, being, and relating to the world. We will term them, in what follows, the Aboriginal Australian technology of *Memory in Relation*.

Hundreds of distinct Aboriginal ethnic language groups exist across Australia. As such, there is no monolithic construct of Aboriginal cultural knowledge possessed universally by Aboriginal Australians. Nonetheless, while each group possesses unique Indigenous knowledges, languages, and traditions, this is not to omit the possibility of common shared technologies underpinning the processes of knowledge transmission. For this reason, when discussing Memory in Relation we will not focus upon a single ethnic, place-based or language group, but will rather draw from a number of distinct

traditions to begin articulating the different dimensionalities of Indigenous Memory in Relation technologies. We pay respects to Torres Strait Islander Peoples in Australia but will refer to Aboriginal culture here. While part of our authorship is Aboriginal Australian, neither researcher is Islander and, unfortunately, we have seen no material on this topic developed by or about Islander communities.

Aboriginal Australian Memory in Relation closely parallels method of loci or memory palace techniques. Despite the similarities, it is important to highlight the significant points of divergence. As Kelly writes, for Aboriginal Australian societies "culture was entirely stored in memory" (2019, p. 35). In this sense, within Aboriginal Australian societies, Memory in Relation has held a more all-encompassing function than the more individualised method of loci. While the western method of loci relies on abstracted, imagined places, in contrast, Aboriginal use of songlines involves real landscapes and relationships to hold cultural meaning and knowledges. This replaces an abstraction with a cultural-land relatedness and intimacy.

Dialoguing with Indigenous Knowledges

Care must be taken in enacting any academic engagement with cultural knowledges. In considering Aboriginal memory-based cultural practices, caution needs to be exercised to avoid assimilating Indigenous thinking into European systems of thought. In existing studies, there is a recurring tendency to conflate Aboriginal Australian cultural memory practices with the European method of loci, ignoring the deeper relational significance of these practices (Kelly, 2016). This conflation often serves the comparative project of evaluating efficacy, yet in doing so poses a significant threat to interpretive and cultural validity. The removal of relationships as confounding variables in the experimental method sabotages the project of describing Indigenous memory and cognition, which, for Aboriginal Australians, exists not only within human communities, but within the wider web of more-than-human relations in which communities are embedded.

Beyond improved rote memorisation, Aboriginal place-based memory practices may be "retrieved forward"—not to replicate the past or to fossilize Indigenous ways—but in the greater service of renewing our relation with the more-than-human sensuous world. In light of the recent fracturing of attention under digitisation—what some have called the Age of Distraction or the Attention Economy (Crawford, 2015; Davenport & Beck, 2001; Stiegler, 2019)—such a renewed relation is both called for and urgently needed.

In recent years, scholars such as Yunkaporta (2019), Battiste (2019), and Arbon and Rigney (2014) have explored the cultural impacts of academic colonisation, including the marginalisation and appropriation of Indigenous epistemologies (Dei, 2000). As a consequence, there has been some progress in integrating Indigenous knowledges and perspectives within academic institutions. Nonetheless, Indigenous philosophy in Australia continues to be under-represented in formal western academic discourse—despite being

sustained through deeply sophisticated and enduring oral, relational, and land-based traditions (Graham, 2014). Australian intellectual traditions have largely been shaped by imports from the global north, with the responsibility of interpreting and contextualising Aboriginal systems of thought often delegated to the social sciences (Muecke, 2011). Anthropology, history, and cultural studies are left to engage in earnest with what is frequently dismissed in mainstream philosophical circles as "ancient" philosophy. This periodisation, when imposed by colonial societies, often proves damaging, implicitly suggesting that Indigenous knowledge lacks philosophical relevance today. Exclusion through periodisation ought perhaps to be viewed as an unsurprising practice, as the construct of the "modern" has historically been used to exclude Aboriginal cultures and peoples from contemporaneity.

As a consequence, in entering dialogue concerning the nature and embedded function of Aboriginal Australian memory technologies, there is a requirement to engage with cultural humility. To this end, we focus here upon elaborating the broader contextual meaning-based significance of Indigenous memory practices, in the hope that such an engagement, rather than rendering down Indigenous practices, will expand and elaborate their broader significance. Indeed, our inquiry is not isolated from the dangers of academic engagement with cultural knowledges; in pursuing our inquiry at this dialogical interface, we must also acknowledge that there are dangers intrinsic to representing subjective data as a basis for claims that are neither verifiable nor falsifiable. This fact will be accounted for in our analysis.

Foundations of Memory in Relation Technologies

Aboriginal Australian societies are among the oldest known continuous human cultures in the world, with conservative estimates placing Aboriginal societies as having existed on the Australian continent for over 50,000 years (Sveiby & Skuthorpe, 2006), for the majority of that period without written (alphabetic) transmission of information (Kelly, 2019). Critical information for individual and group survival in various Australian environments has been relayed in stories, artistic expression, and artisanal crafts in complex, multi-layered systems. These constructs convey information to within-group observers at different levels of depth and complexity, depending on their education, experience, and status within the group. Each clan and nation have their own established stories, which contain and transmit vital cultural knowledge, including Aboriginal law, personal rights, responsibilities, land use principles, and astronomical and navigational information (Norris & Harney, 2014).

Songline stories within Aboriginal Australian cultures are ancient oral traditions, notable for their consistency across generations and the careful stewardship of their custodians and Elders (Sveiby & Skuthorpe, 2006). These narratives are conveyed through a range of expressive forms—spoken word, dance, painting, and petroglyphs—often combined to form multi-modal systems of transmission. Through these methods, extensive bodies

of cultural knowledge can be preserved and accessed without reliance on a written script. Over time, individuals accumulate a significant reservoir of flexible and adaptive knowledge.

Elders hold a position of deep respect within these communities, as their accumulated insight and experience are fundamental to the wellbeing and continuity of the group. Songlines often encode crucial knowledge related to seasonal cycles, political alliances, subsistence practices, tool-making techniques, and sacred or restricted teachings. This information may also be embedded in material culture—carvings, paintings, woven objects—whose symbolic or geometric designs often carry meanings inaccessible to those outside the cultural context (Morphy, 1991).

When knowledge outside the traditional songline corpus needs to be conveyed, it is not uncommon for new stories to be composed, drawing on local ecological and geographical features. These narratives encode sophisticated spatial, temporal, and quantitative data, rehearsed repeatedly to enable reliable recall. Personalised and adaptable, such stories exemplify the generative nature of Indigenous knowledge systems—an area of cultural practice that remains underexplored and presents rich potential for further research.

Place-based Relational Memory Systems as Ongoing Demotic Innovation

There exists much complexity surrounding the relationship between Aboriginal Australian identity and cultural innovation. This complexity arises in light of the tendency to view Indigeneity in rural locations as emblematic of authentic or "real" Indigeneity (Peters & Andersen, 2013). We suggest this may be resolved by instead placing attention upon important forms of "demotic" cultural innovation: the practices and forms of life that are the product of organic sequences of adaptation.

Culturally there is a necessity to resist static understandings of Aboriginal Australian cultures and consequently attend to the contemporary relevance for Aboriginal peoples in how they understand place-based mnemonic practices and dynamics. Thus critically, Aboriginal memory practices ought not be viewed as traditional and unchanging, but rather responsive demotic cultural innovations; serving both to embed and re-embed Aboriginal communities in landscapes of meaning. These memory practices, minimally, draw upon the following elements of Aboriginal cultural and intellectual practice: locatedness, relatedness, embodiment, orality, narrative, and imagery. These elements of cultural practice, when unified, weave together a learner's awareness of their place, relationships, mythos, and lifeworld. Aboriginal cultural practices are not uniform or universal—the elements of land-based memory technologies are practised in different ways according to the nuances of place, age, gender, clan, and more. As a consequence, any individual

adapting these methods will be creating their own culture- and site-specific practice that is unique to them. Nonetheless, we will explore each of the core foundations of Aboriginal Memory in Relation practices in what follows.

Core Foundations of Memory in Relation

The six foundations of Aboriginal cultural and intellectual practice—locatedness, relatedness, embodiment, orality, narrative, and image—cohere into an integrated system of memory in relation. While anthropologists have acknowledged the ecological embedding of oral and mnemonic practices, there is little work that considers these elements in their interrelationship as a systemic whole. This article seeks to advance understanding of the complexity of Indigenous knowledge transmission by showing how these foundations combine into a coherent set of cultural technologies.

Together these foundations may be understood as constituting an Indigenous phenomenology—a basis from which Aboriginal epistemologies and metaphysics emerge, grounded not only in ways of *knowing*, but in ways of *being*. Comparable arguments have been made in relation to enactivism, and eastern phenomenological traditions (Tempone-Wiltshire, 2024b, 2024c; Tempone-Wiltshire & Dowie, 2024a; Thakchoe & Tempone Wiltshire, 2019). This embodiment-based understanding has proved critical to the evolution of mindfulness in the clinical sphere (Tempone-Wiltshire, 2024d; Tempone-Wiltshire & Dowie, 2024b; Tempone-Wiltshire & Matthews, 2024a) and so has natural implications for approaching Indigenous psychology. The following sections will examine each dimension of Aboriginal place-based memory technologies in turn, showing how they cohere.

Locatedness–Human Memory in Dialogue with a Sentient Landscape

In Aboriginal Australian cultures, information does not exist unless it is located precisely because human memory exists in dialogue with a sentient landscape (Graham, 2014; Graham et al., 2011). This fact is deeply intertwined with Indigenous lore. Along Aboriginal Australian songlines, each point of interest on a path of travel represents part of a story and a repository for knowledge. Cruikshank (1990) documents a similar practice in several Native Alaskan cultures, and Johnson (2010) writes:

> For the Gitskan, trails are traversed first by listening to teachings by Elders and continue to be travelled in story as well as by actual travel on the land. The stories of the land and its named places are thus deeply enmeshed in traditional training of the young. (p. 44)

Indeed, the work of many North American scholars is grounded in the premise that Indigenous cultural memory is located within a sentient landscape—see Basso (1996), Berndt et al. (1982), and Cusack-McVeigh (2017).

In an Aboriginal Australian cultural context, the malleable texture of perception is such that understanding emerges out of metaphor and pattern, in relationship with landscape. It is the living landscape and larger community—those that live alongside humans—that texture human perception, and indeed, memory. The multiple non-human entities that comprise the living landscape take on a diversity of presentations: both flora and fauna that migrate through the local region; winds and weather patterns; geography and its variegated landforms. As such, to see the pattern of creation, it is necessary to turn toward human relationship with the broader context of the living earth. This includes forests, rivers, and mountains but also power plants, landfill, fences, and Wi-Fi. In an Aboriginal Australian cultural context, creation is everything that exists, whether in good relation or not (Yunkaporta, 2019).

The flow of nourishment between the landscape and its human inhabitants depends upon the rituals and practices that ensure an ongoing line of communication (Cusack-McVeigh, 2017). This is why locatedness proves foundational to an Indigenous phenomenology. These communications remind humans of their inalienable place in the larger society of beings; these practices are part of a process of listening and attuning to the presences that surround and saturate humans' daily lives. Indigenous relation-based memory practices, grounded in locatedness and specific territorial contexts, serve as intermediaries between the human and non-human community; the larger ecological field.

The subject of locatedness and the sentience of landscape is inseparable from the question of animism and panpsychism. The western identification of matter as dead—rather than living—may be understood as an inheritance of Greek culture post-Parmenides: a misidentification that has, for centuries, constrained western understandings of phenomena ranging from consciousness to self-organising systems like galaxies. In contrast, an Indigenous perception of the cosmos as living Country offers a compelling counterpoint. Whereas western cosmology often regards the space between stars as lifeless and empty, Aboriginal Australian stories portray these dark regions as living Country—based on the observable gravitational attraction exerted by these dark areas upon celestial bodies (Yunkaporta, 2023).

Such a counter conception of sentient, living Country is critical to the Aboriginal Australian understanding of locatedness, which in turn shapes the animistic metaphysics underpinning Aboriginal Australian mythology and lore (Tempone-Wiltshire, 2024a; Yunkaporta, 2023). Animism can be understood to be central here, as the intermediary realm between human and non-human remains accessible only through continual (re)engagement with the animate powers beyond the human community. Balance and health

within community begins in this broader relation with the surrounding land and non-human others perceived within it. By contrast, destructive influences within human communities are legible, indeed traceable, to disequilibrium between the community and the larger field of forces in which living systems are embedded (Abram, 1996). This unearthing of inter-systemic patterns and occluded bioinformatics is concealed when humans become ungrounded from both place and local relation.

To illustrate the importance of locatedness to cognition and memory, Yunkaporta (2023) offers a yarn with Indigenous thought-leaders and knowledge keepers, Aunty Anne Poelina and Aunty Mary Graham. Aunty Anne (who holds two PhDs) is a Nyikina Warrwa woman from the Kimberly region of Western Australia. Aunty Mary is a senior Kombumerri woman from the east coast. The Aunties describe the Law of Relationality of First Peoples. According to Aunty Mary, this is a law of relationality that you can only learn from the land. The first relation is between land and people, and the second relation is between people and people. The second is contingent upon the first. Both Elders are adamant that we best learn this law from our totemic connections with diverse species. This law is inscribed in the landscape and translated through lore that is embedded in the stories of ancestral beings and living entities, intimately related with the local geography; its rivers, plants, and animals. Every region has its own unique natural law and unique ways of attuning to that system.

Importantly, the Aunties emphasise that the entities of place are always coming into dialogue with other regions along songlines—energetic pathways of lore that translate the law and connect all places and peoples. Part of humanity's role as a custodial species is to facilitate this process. Aunty Anne's local lore connects with the systems of all the other cultures, languages, and territories along the great Martuwarra (Fitzroy River), under a larger regional lore called Walungarri. This in turn connects further afield, from Sunrise Country to Sunset Country, in a greater continental system known as Wunarn lore. So, the energetic moral systems at the local level connect to greater patterns of Walungarri and Wunarn as nested, fractal systems of *First Lore*. That is why the lore encoded in Aunty Anne's local songlines contains trade route maps, ceremonies, and stories from Uluru in central Australia, Kakadu in the far north, and Alpine Victoria in the far south. In that lore Aunty Anne can access encyclopaedic knowledge of how and when to travel from the Atlantic Coast to the cold mountains in the southeast for the annual Bogong Moth gathering, including information on protocols, language, and procedures to be followed in the Bogong Ceremony.

In this way, the cultural knowledge of each region is not just contained in the tribe's living memory and the sentient landscape, but also in an enormous continental permanent ledger, in which each place also keeps the lore of other places. This is how memory works in Aboriginal Australia, and indeed how memory has functioned across human history more broadly: all pre-industrial societies relied on extended, embodied, and enacted memory

systems embedded in land, story, and ritual (Basso, 1996; Cruikshank, 1990; Kelly, 2016; Turner, 2014). As Aunty Mary asserts, in Aboriginal philosophy, I am located, therefore I am (Yunkaporta, 2023). Central to an Indigenous understanding of selfhood, of I, is the notion of relatedness. I exist because I exist *in relation:* locatedness intimates this connection.

Relatedness–Tuned for Relationship

As previously described, in Aboriginal Australian cultures, no information can exist unless it is in relation to places, entities, people, and phenomena in the landscape (Graham, 2014; Graham et al., 2011). Human beings are attuned to perceiving the world through relationship. All the gates of mundane consciousness begin in the senses—our eyes, nostrils, ears, skin, and tongue—all begin as bodily receptors nourished by their encounter with otherness (Merleau-Ponty, 1945/1962). The landscape is not an idle backdrop or a flat plane. It is a tumbling, breathing, ever-shifting chorus of life. Its voices rise from the rustle of eucalypt leaves, the call of the currawong, the crack of dry gum branches under kangaroo paws, the whisper of wind through spinifex, the murmur of creek water over stone. Country speaks in many tongues, and all are alive. This is family, a family of beings with whom humanity has lived in constant engaged relationship since dawn. Human struggle and celebration begin in this exchange.

Relationships with non-human others and the land form the totemic basis for all connections in mind and spirit, which are essential for lasting cultural meaning and memory (Tempone-Wiltshire, 2024a; Yunkaporta, 2019). To live as a species on earth is to live in negotiation with, and relation to, the sensuous surroundings—to exchange possibilities with a textural, animate, communicative creation. The world articulates itself through gestures felt on the skin, inhaled, heard, and tasted; and we humans reply through sound, movement, and mood. Every exchange draws humans into relationship, and through these relationships we are nourished collectively. Among many Aboriginal Australian peoples, this relational reciprocity is encoded through totemic affiliation—not as symbolic or metaphorical representation but as kinship. A person may be Kangaroo or River Gum or Honey Ant—as an ontological entwinement, reflecting the living memory of Country speaking itself through form, story, and obligation.

These barely discernible informatic systems are largely verified through collective sensing, feeling, and instinct, rather than being isolated, measured, or computed—an idea resonant with work in embodied and enactive cognition, particularly De Jaegher and Di Paolo's (2007) account of participatory sense-making. Thus, the heuristic for discerning and describing these communicative patterns is the metaphor of "spirit"; of intelligent entities and their essences coded in the landscape as law and in intergenerational narratives as lore.

Relationship also proves vital to decoding patterns of bio-culturally embedded knowledge. Multi-literate traditions and psycho-technologies are required to navigate symbiotic complexes of land, culture, and species layered

within non-linear and interdependent relational systems. Indigenous mythology, lore, and ritual all speak to and from intensely interrelated processes, occurring within totemic taxonomies of beings, phenomena, substances, territories, seasons, and sites. Such Aboriginal Australian epistemologies may be employed for predictive modelling, and therefore cultural value is found in discerning subtle layered patternings of relationship. This process involves peer verification and falsification protocols, which distinguish such systems' literacy from mere patternicity, whereby individuals and crowds may make sense of random events and shapes through the projection of familiar metaphors (Battiste, 2019). This is inclusive of, but by no means limited to, the prediction of ecologically important variables such as weather and resource availability, which are so critical in hunter-gatherer life. As Yunkaporta (2019) writes:

> People today will mostly focus on the points of connection, the nodes of interest like stars in the sky. But the real understanding comes in the spaces in between, in the relational forces that connect and move the points. ... If you can see the relational forces connecting and moving the elements of a system, rather than focusing on the elements themselves, you are able to see a pattern outside of linear time. ... If you bring that pattern back into linear time, this can be called a prediction. (p. 91)

In seeking to grasp the broader configuration of how things relate—particularly when navigating complex contemporary systems—principles drawn from Aboriginal Australian ways of thinking may offer valuable insight beyond their traditional contexts. As Yunkaporta (2019) suggests, this involves shifting attention away from individual elements toward the relationships between them: "This calls for looking beyond the things, focusing on the connections between them ... then looking beyond the connections and seeing the patterns they make" (p. 89).

As Abram (1996) aptly describes it, "we are human only in contact, and conviviality, with what is not human" (p. 2). That is, while understanding relatedness within and between systems may prove vital to valid pattern recognition, modernity may be characterised as a condition resulting in systems-blindness, as articulated by Bateson's "pattern that connects" (Tempone-Wiltshire & Dowie, 2023a). This disconnection from our evolutionary affordances, and our bio-cultural purposes within our customary ecological niches, has created a state of existential precarity in which multi-vocal, pluriversal landscapes of meaning have become endangered, paradoxically as our own species' population has increased exponentially.

Embodiment–A Myriad of Interpenetrating Voices

Indigenous science recognises that mind is not confined to the brain but distributed throughout the body and into the physical environment (Shapiro, 2010). Neurological activity is thus not only embodied but also embedded in the world around us. For instance, when we grasp a tool, the brain integrates it as part of the body schema—rendering it an extension of our cognitive and neural functioning (Mullappally, 2022). On a more conceptual level, the significance we attribute to places, people, and objects—and the ways we structure our relationships among them—can be seen as an outward expression of this thinking mind. As Yunkaporta (2023) writes: "Through meaning-making we effectively store information outside our brains, in objects, places and relationships with others. This is how spirit works" (p. 115).

The encoding of ecological knowledge in physical, tangible things—such as the night sky, song, dance, sculpture, paintings, tools, and other objects—contains critical information regarding seasonal food sources, intra- and inter-tribal political relationships, tool use, manufacturing technology, and "secret business". This encoding of knowledge in tangible things has been recognised in research across diverse Indigenous contexts, involving incorporation into traditional songlines, while also carved, painted or woven into artworks and tools. Hardenberg and Stirling (2015) discuss the use of carved polar bear figurines; Kaaronen et al. (2024) the use of string figures; Johnson (2014) the use of the night sky; Fernández-Llamazares and Lepofsky (2019) the use of song; and Curran et al. (2019) the use of women's ceremonies (including dance) to encode and transmit local ecological knowledge. This may be termed "haptic" or distributed cognition, which involves recognition that thinking and learning occurs also outside the brain in the objects and beings we interact with, and the relationship between them (Shapiro, 2010). Distributed cognition has provided valuable insights into memory studies—particularly in exploring how memory is scaffolded across social, material, and environmental systems (Michaelian & Sutton, 2013).

The growing appreciation for haptic knowledge is reflected in the rise of somatic practices within the broader "embodiment movement", which utilises haptic design principles as technologies for accessing affective memory through purposeful bodily movement (Rajko et al., 2016). Conciliant ideas and approaches can thus be found within the broader framework of embodiment cognition, notably the work on 4E cognition, which attends to the embodied, embedded, enacted, and extended dimensions of consciousness (Tempone-Wiltshire & Dowie, 2024b; Tempone-Wiltshire & Matthews, 2024a). While the framework of embodied cognition attends to the circular structure of embodiment and its role in complex feedback systems, this article extends upon the evolution of organism through environmental relations to emphasise the evolution and sustainment of human ecosystems and cultures.

In Aboriginal societies, then, knowledge is encoded in objects, rituals or theatre, as part of a sacred creation process. One example is the traditional message sticks, in which a kind of haptic knowledge is encoded beyond the literal meaning of marks and symbols etched in the wood. A similar tactile and affective relationship exists with Country and with ancestral presences that may be invoked when moving through particular storied-landscapes. Knowledge is often encoded in such places, and memory can be reawakened through physical return to those locations.

This form of haptic cognition is not confined to the brain but is understood as distributed throughout the body—intelligence lives in the hands, the feet, even the hair (Shapiro, 2010; Tempone-Wiltshire, 2024a). When the body moves with attention, it becomes a conduit for unlocking memory and meaning. In many Indigenous knowledge systems, learning is not an abstract or disembodied process but one anchored in the rhythmic repetition of action—walking a songline, shaping ochre with the fingers, mimicking ancestral gestures, or tracing knowledge into the earth with a stick. Knowing comes through doing, and memory is carried not in texts but in the body's movement through Country. As Mills and Dooley (2019) note, kinaesthetic forms of learning have long been central to Indigenous pedagogies and have demonstrated deep efficacy in sustaining cultural continuity and ecological knowledge.

These varied technologies prove highly effective in encoding knowledges, as the technologies support the learner's cultivation of abilities for shifting states of consciousness in order, precisely, to make contact with these other variegated forms of life and sensory awarenesses with which our existence is intertwined. Indeed, the broader function of land-based memory practices is to enter relationship with other species on their own terms.

One powerful example is the Seven Sisters Dreaming (Kungkarangkalpa), which stretches across vast tracts of land and sky, embedding complex ecological, ethical, and cosmological teachings in the movements of human bodies in relation to the land and stars. As one walks the track, the choreography of Country reveals itself through rock formations, waterholes, and constellations—each encoded with aspects of the sisters' flight and the relentless pursuit by Wati Nyiru, the shape-shifting man. The traveller must attune not just to geography but to ancestral moods, gendered ethics, and non-human presences. The land itself becomes animate with their drama: a cracked boulder might hold the impression of a sister's resting place; a pool reflects her tears. In this way, knowledge is not abstracted but relational—held in the footfalls that retrace their journey, in the breath that sings their names, and in the bodily comportment that honours their choices. To remember is to enter relationship; to know is to move with care across a living terrain.

The embodied aspect of these technologies is essential to engagement with land-based memory practices. Embodied ritual constitutes a customary pathway for slipping the perceptual boundaries of our quotidian reality and entering non-ordinary states. Such performance might involve enacting the

gesture and expression of a wide array of non-human others, a shamanistic theatre of imaginal projection into otherness. Aboriginal Australian cultures experience human consciousness as simply one form of awareness amongst many. For instance, in certain ceremonies linked to Emu Dreaming, the initiate may mimic the gait, gaze, and feeding patterns of the emu, not as imitation but as alignment—entering into the emu's perceptual world to receive knowledge from that way of being. Similarly, as we have described, in segments of the Seven Sisters Dreaming, women re-enact the flight of the sisters and their evasion of Wati Nyiru through body movement, song, and tracking—an embodied ethics of resistance encoded in land and sky.

To develop a heightened receptivity to the communications of the greater field of awareness, of a world made up of multiple intelligences with which humans are intertwined—this is the wider function of the system of holding cultural memory in relationship. Important work recently has been carried out in the domain of embodied cognitive science, exploring the traditional function of shamanic ritual precisely to the ends of producing such perceptual shifts (Tempone-Wiltshire & Matthews, 2024b).

Industrialisation has seen a domestication of modern citizenry. The industrialised subject is drawn out of relation with the more-than-human world in many meaningful ways. Shopping malls, for the majority, have supplanted ecosystems. Our focus on consumer need and satisfaction within the individual has replaced meaningful engagement with the more-than-human, or with the self-in-relation. As a product, the industrialised subject is frequently acquainted with the needs, capacities, and possibilities of their own form as a social body, but lacks intimacy with the lived experience of other beings who do not share the same morphology or cultural habits.

One illustration of the numbing of our receptive capacities to the broader field of awareness is the disembedded nature of the industrial food chain. This process has led to the objectification—particularly of non-human animals—through factory farming and the treatment of life as product under industrial conditions. It might be said that the relation that humans hold to the resources upon which they depend influences the modes of intimacy available to them. Cultural memory is embedded in our forms of relatedness—it shapes understanding of what it is to be human.

By contrast, in many Aboriginal Australian contexts, the sourcing and sharing of food remains deeply relational and ceremonial. The act of hunting or gathering is not extractive but participatory: it involves singing to the animal, speaking to the land, observing taboos around season and kinship. The animal is not a resource, but a relation—an emissary of Country. Here, memory is not disembedded, but carried in the hand, the footstep, the cooking fire, and the reciprocal gaze between hunter and hunted.

Aboriginal cultural memory, being relational and place-based, provokes an interspecies intimacy, which is itself productive of deeper insights into relational patterns and constellations. This is critical to survival, as evolution demonstrates—any organism which fails to respond to the feedback from the

system upon which it depends dies; that line ends. Thus, the physiological evolution of a species may be understood as a form of embodied cultural memory, responsive to context. By the same token, cultural mythology and lore provide a further critical pathway for the embodying of memory in ways that are context-sensitive and adaptive. For example, Martu fire practices in the Western Desert are guided by intimate ecological memory encoded in story and practice—burning in small, mosaic patches to foster new growth, regenerate habitat, and attract species like the goanna. The knowledge of when, where, and how to burn is held in body, song, and seasonal attunement, reflecting a fine-grained responsiveness to Country and its non-human inhabitants (Bird et al., 2016). Such sensitive engagement with one's environmental context becomes a key predictor of insight into the dynamics of the system in which humans are inextricably involved. This capacity is not only cultural, it is a significant part of the evolutionary process and an important predictor of evolutionary fitness.

Aboriginal Australian practices that foster interspecies intimacy also facilitate the accessing of contextual data-processing capabilities. These may be employed for long-term weather pattern analysis, catastrophic risk assessment, quarantine responses, emergent disease treatment protocols, and a multitude of other systems-responsive measures requiring dark data processing that seem unfathomable to non-Indigenous humans (Berkes & Berkes, 2009), As such, it may be asserted that various forms of Indigenous "ancestor worship" invoke similar modes of attentiveness and communion with non-human entities through ritual-altered states inspired by an awareness of sentience beyond one's current embodied form.

For instance, in Djungguwan, a male Yolŋu ceremony in Arnhem Land, ancestral beings are sung back into presence through highly structured sequences of song, dance, and painted design—each action renewing kinship obligations and bringing ancestral consciousness into the present ritual space. Similarly, Warlpiri and Pitjantjatjara men trace the movements of cosmic ancestors like the Orion figure across the night sky, recognising these stellar forms not as metaphor, but as living presences whose actions shape law, seasonality, and human behaviour. Similarly in Warlpiri Yawulyu, women's song cycles, the ancestors are not remembered as distant or metaphorical but as present through song, Country, and embodiment. Walking, singing, and painting the stories reactivates the ancestors' presence in the land and body.

Such communion begins in awareness that these other incarnations are never wholly other, insofar as humans all inhabit forms connected beyond the arrow of time to both ancestors and descendants simultaneously—for example, in Aboriginal kinship systems where a newborn may be recognised as carrying the spirit of an ancestor, linking past and future within present relations. In the whole cloth of intergenerationally shared time and place there is a kinship, an intertwined holism of endlessly overlapping cycles within an enveloping landscape.

Cultural memory held in relation inextricably involves lore, which encodes mythology, which always requires imagination. Thus, these intelligences bound to the sentient landscape can be met through imaginative projection, through the cultivation of our empathic qualities, and through understanding our common interpenetrating fate. Aboriginal Australians begin in an understanding of the body as not merely a mechanical object but, as Abram (1996) describes, "the mind's own sensuous aspect" (p. 15), or at least an aspect of this aspect. It is through the body, and the bodily imaginarium, that the dispossessed and domesticated may reconnect, through a living dialogue, with a pluriverse of intelligences.

Orality–Language Encodes Memory

The use of narrative to transmit communal knowledge in Indigenous cultures has long been recognised by scholars (Basso, 1996; Biesele, 1993; Cruikshank, 1990; Gwich'in Elders, 1997; Laird, 1975; McClellan et al., 1987; Nicolar, 2007; Opler, 1938; Sobel & Bettles, 2000; Turner, 2014; Unaipon, 2001). Language may, however, be encoded in a range of ways. The way human beings encode language actually shapes the quality and retrievability of human memory. As non-print cultures, Aboriginal Australian societies have encoded memory in a different way to cultures that depend upon alphabetic systems for recording, storing, and transmitting knowledge. Indigenous cultures retain contact with the sensual world by virtue of maintaining the oral tradition itself. Among the Western Arrernte, for example, place-names are not arbitrary labels but mnemonic devices: each name encodes a narrative fragment of the Dreaming, often tied to ancestral movement, ecological knowledge or kinship law. Speaking the name recalls a site-specific story, and story recalls a set of obligations—what to do, who can go there, what species are associated, and what ceremonial actions must be taken. In this way, language is not only descriptive, but instructive and alive—activated in the voice, body, and land simultaneously. Yet, as Abram (1996) suggests, with the advent of alphabetic systems of written inscription, language began to diverge from its rootedness in kinaesthetic interfaces with reality, entering ever more abstracted relationship with the sensuous lifeworld.

Indigenous knowledge systems—encompassing production, preservation, and transmission—have frequently been sidelined as mere cultural expressions or customary practices, rather than acknowledged as rigorous intellectual traditions and valid methodologies of inquiry (Dei, 2000). As Yunkaporta (2019) notes, Indigenous knowledges are only valued if they are fossilised. Yet the oral traditions of First Peoples, enriched by non-verbal elements such as symbolic imagery, embodied movements, and tacit contextual references, present deeply layered and sophisticated modes of understanding. A painted shield may encode a hunting technique; a star formation may mirror a kinship system; a gesture in a ceremony may contain laws of movement across Country. These oral practices do more than convey

information; they constitute a distinct epistemological form, through which knowledge is actively created, maintained, and passed down through generations.

Each act of retelling becomes a moment of transmission, establishing kinship-based, recursive feedback loops that safeguard cultural continuity and intergenerational memory—Indigenous knowledges accumulated and refined for well over 50,000 years (McEvoy et al., 2010). It is worth noting, however, that while Indigenous science and philosophy is currently in dialogue with western knowledge systems, the recent addition of print-based communication to the multi-literate traditions of Indigenous knowledge transmission processes has proven to be a confounding element in cultural exchange, as non-print traditions have been largely ignored by western scholars (Battiste, 2019). Scholarly engagement with Indigenous knowledge systems has historically focused on what knowledge is being conveyed, rather than how it is encoded, held, and transmitted (Yunkaporta, 2019). By contrast, we argue for greater attention to the processes through which knowledge is maintained—highlighting the multi-literate modalities involved in oral traditions. This includes the deliberate use of linguistic and poetic devices that optimise memory and meaning in non-written forms. For example, in many Aboriginal songlines, key ecological and navigational information is encoded through rhythm, rhyme, repetition, and alliteration. A single phrase may embed a geographic coordinate, a species behaviour, and a kinship law—all cued to melody and movement. The form is inseparable from the function; it is the structure of the story that ensures its continuity.

In relation to this, Aboriginal record-keeping differs considerably from print-based cultures. The principal difference is that collective orality connects listener and speaker in communal experience that unites present and past in memory (Hulan & Eigenbrod, 2008). A complex sphere of techniques has evolved for the successful re-iteration of cultural relation-based memory practices that emphasise the use of the mnemonic devices listed above. Such techniques of oral transmission have been articulated in a North American context by Hymes (1981), Lord (1960), Ong (1982), Scalise Sugiyama (2021), and Tedlock (1971, 1977), among others, while Dissanayake (2000) discusses the techniques of repetition, exaggeration, and elaboration as the foundation for the arts.

It has been argued that the exclusion of Indigenous traditions in Australian academic settings has occurred in large part because many Aboriginal concepts may be described as place-, body-, and sound-based, rather than logic-based (Muecke, 2004). However, the oral modalities of First Peoples—alongside non-verbal forms such as symbolic representation, embodied gesture, and implicit reference to shared context—offer rich and nuanced frameworks for understanding.

When a Yolngu Elder sings a stretch of Country, the song is not simply about the land—it is the land, sounded into being through rhythm, language, and bodily presence. It is a performative enactment of land. The act of

singing reaffirms kinship ties, ecological relationships, and legal structures embedded in that place. The melody, rhythm, and language reconstitute ancestral presence and legal order, sustaining Country as a living being through sound (Morphy, 1991). The act of retelling itself becomes an event of transmission, creating kin-centric, self-reinforcing feedback systems that ensure continuity of cultural knowledges and intergenerational connection.

Narrative–Yarning Practices

The importance of relationship through narrative in Aboriginal knowledge systems appears in the context of yarning. The practice of yarning builds on the oral genres of handing down information through the sharing of stories. The yarning method, as articulated by Bessarab and Ng'andu (2010), is a legitimate form of Indigenous research and knowledge-sharing grounded in relationality, respect, and reciprocity. Their work highlights yarning as both methodology and mode of deep listening. Yarning may unfold in the quiet shade of a gum tree, during shared meals, or while hands are busy weaving a dillybag—speech flowing with pauses, tangents, and returns: an exchange and transmission, shaped as much by silence as by words.

Yunkaporta (2019) extends the discussion into kinship-mind and pattern-based knowledge systems, to describe yarning as a methodology that embeds knowledge and thought within rich networks of relationship—structures that extend both laterally across community and vertically through time. Yunkaporta (2019) refers to this as kinship-mind, noting: "The only sustainable way to store data long-term is within relationships—deep connections between generations of people in custodial relation to a sentient landscape, all grounded in a vibrant oral tradition" (p. 167).

In this worldview, the interrelations between systems are as vital as those within them. To grasp the centrality of relationship in Aboriginal Australian cultures, one must understand what it means to live within an intricate web of kinship ties and communal responsibilities. These relationships are not abstract—they carry concrete obligations, shaping ethical conduct and calling for respectful, careful engagement with the world.

Aboriginal ontologies and epistemologies have been shaped through cultural practices that involve the sharing and co-creation of knowledge on Country. From this perspective, knowing is not detached or abstract. It is grounded in one's responsibilities and relationships with others—with kin, ancestors, the land, the law, and the Dreaming. An uncle might begin a yarn not with a direct answer but with a story of a place, a time, a creature—a goanna that behaved in a certain way—letting the lesson unfold indirectly, through metaphor and lived example. The knowledge that custodial species exist to sustain creation is not conveyed through doctrine but through cultural metaphors, stories, and ongoing acts of adaptation and transmission (Yunkaporta, 2019).

In Aboriginal Australian cultures, then, narrative pathways through landscapes of knowledge are encoded in stories for the production, transmission, and storage of information. As Yunkaporta (2019) states:

> This connection is interwoven with every learning experience within the communities of First Peoples; it is ritual, the force that animates all Aboriginal knowledge; a spirit of genius that shows the difference between yarning and conversation, story and narrative, ritual and routine, civility and connectedness, information and knowledge. (p. 157)

Narrative is the primary mode of communication drawn upon during yarning, which often takes place alongside shared material cultural activities, like weaving, painting, and string-making. In these moments, the hands do not just pass down skill—they become a medium through which histories, warnings, genealogies, and Dreaming tracks are passed on. Such an exchange of stories is understood as requisite for growth and awakening. As Yunkaporta (2019) notes, from an Aboriginal perspective, meaning is made in the meandering paths between words, not the isolated words in themselves.

The experiences of life are processed through story-making, which forms the basis of lore. As such, knowledge is more readily transferred into long-term memory in the form of a story (Kelly, 2016). Yarning, then, is a structured cultural activity, a rigorous methodology for knowledge production, inquiry, and transmission (Yunkaporta, 2019). This ritualised practice for meaning-making and innovation is highly contextualised in the local worldviews of those yarning, as it is embedded in relationship with both place and kinship circles. Furthermore, it is shaped by protocols of active listening, respect, overlapping speech, non-linearity, and the revisiting of ideas. In this way it unearths interconnections and correlations between diverse sets of data. The practice invites dialogue to unfold in a spiralling manner—doubling back, sitting with uncertainty, and circling toward insight rather than aiming directly at it. Knowledge is not extracted but revealed through relational resonances.

Image–Sand Talk

In many Aboriginal Australian cultures, symbols, patterns, and images are used to encode knowledge in layered and often non-literal ways. We have explored the way in which information can be transmitted through oral traditions, yet knowledge is also transmitted via cultural activity that incorporates image and story attached to place and relationship. Images may be carved into objects to serve as mnemonic devices, referencing knowledge that can be "read" from those objects. Such images and the places and narratives they represent may be so bound together that they may be called "story-places". For example, a carved design on a message stick might encode a journey taken, a conflict resolved or a marriage arrangement, all of which can be "read" by those trained in the system.

These are usually not literal codes for specific units of information, but rather metaphors that recall larger sets of knowledge (Kelly, 2016). These metaphors can contain vast amounts of information that can be recalled either by replicating the image or interacting with an object or place where

the image is inscribed. A rock painting of a serpent track near a waterhole, for instance, might cue a seasonal migration story, the rules of access to that site, and its associated Dreaming law.

In this way, such knowledge is transmitted down and across generations in temporary objects reproduced periodically or in more permanent visual records carved or painted on rocks and trees. In the case of ritual objects, tools can be created and imbued with memory, law, lore, and story, so that recall can be triggered by holding or interacting with that object at any time or in any place. For example, tjuringa stones held by Central Desert custodians are not simply symbolic—they are embodied containers of ancestral law, often wrapped and stored away, only to be brought out in ritual contexts when knowledge needs to be recalled or transferred.

We offer as illustration the Aboriginal cultural practice known as Sand Talk, which involves drawing images on the ground to convey knowledge. These symbolic forms are drawn from specific cultural contexts and, while conceptually rich, their meanings vary considerably across the Australian continent. No single set of representations should be taken as speaking for Aboriginal peoples. The following exploration is offered as a provocation: we encourage readers to notice any shifts in their reflective processes as the communication moves from print-based to symbolic code. Readers should attend to the layers of meaning that may be embedded within an image.

Building on Yunkaporta (2019) in *Sand Talk,* consider a symbolic set of examples drawn from Aboriginal visual grammar. A copyright symbol **(©)** might be seen, from an Aboriginal perspective, as representing a person sitting alone, isolated from others. By contrast, placing the **C** outside of the circle **(CO)** evokes a person seated at a fire or meeting place: still alone, but in relation.

The first image **(©)** could be translated loosely as **I–I—**a self entirely enclosed. The second **(CO)** becomes **–I–,** with the hyphens symbolising the human and more-than-human kin who constitute the self-in-relation. This reflects a cosmological understanding that one's identity is made up through interconnection, not individual isolation.

Adding another c-shape around the circle **(COↃ)** creates a more collective identity: **–us–2–,** indicating a self in relation to an intimate other. A more complex configuration **(CↃOCↃ),** with some c-shapes facing the circle and others turned away, might be understood as **–us–only–,** referring to a bounded group identity. In contrast, a symbol where all the c-shapes face toward the circle **(CCOↃↃ)** could represent **–us–all–**, indicating inclusive, relational kinship across difference.

The energetic exchanges embedded in each of these relational forms can be seen as mirroring symbiotic relationships in nature—such as those between predator and prey, parasite and host. These dynamics form the basis of many Aboriginal rituals of exchange, including ceremonial and economic practices.

In non-Aboriginal worldviews, such interactions are often viewed in isolation and framed as zero-sum encounters, where one benefits at the other's expense (or both do, or neither). These might be symbolically represented as:

> **+– (giver–taker)**
>
> **–+ (taker–giver)**
>
> **– – (mutual loss)**
>
> **++ (mutual gain)**

Aboriginal ontologies in which all things are related and there are therefore no zero-sum exchanges, and therefore no competitive dynamics, may symbolically represent these encounters as avian and mammalian legs indicating *give* (feathers) and *take* (fur).

> **>< take–give**
>
> **<< give–give**
>
> **>> take–take**
>
> **<> give–take**

These pairings represent energetic or informational exchanges observed in both ecological and social systems. Rather than modelling interactions as zero-sum or competitive (as in many western frameworks), these symbolic forms reflect Aboriginal relational ontologies—where reciprocity, asymmetry, and interdependence are understood as embedded within all living systems. This may be further expanded to include the informational exchanges that occur in these categories of kin-relation. Consider the following illustrations:

> **=O= → Point**

The O represents a node or being—a person, entity or memory point. The lines = on either side imply containment, emphasis, framing. In Indigenous semiotics, contextual placement matters, so this is not simply a symbol but a situated point of activation. It is held and recognised in relation.

> **O=O → Connection**

Two nodes (O O) are linked by a shared pathway or relational thread (=). This symbol expresses a reciprocal relationship, such as kinship, trade or shared memory. In Aboriginal epistemology, relation itself is a source of meaning; connection is activation.

> **OXO → Loop**

Here, the X suggests reciprocity, mirroring or a threshold of exchange. The loop between beings (O O) may signify a closed cycle of ceremonial return, shared consciousness or a dynamic mnemonic system. It indicates knowledge that circulates rather than terminates.

=O=O= → Field

This extended configuration suggests a distributed system of beings or memory points, framed by relational boundaries. It represents a relational field—possibly a kinship system, a cultural ecology or a shared mnemonic landscape. Meaning arises not from the individual nodes, but from their pattern of interrelation.

The Role of Culture-Bound Relational Memory Practices in Animistic Awareness

In studying Aboriginal Australian cultural memory practices, it is helpful to also consider how these systems function within broader ontologies—particularly those grounded in animism and relationality. These perspectives deepen our understanding of how memory is activated through place, presence, and more-than-human relationships. In describing cultural land-based memory practices, we are speaking of something that is not just a memory aid but rather a device for developing relationship with a wider animistic realm of intelligence that supports and guides us. We have expanded upon the core elements of these place-based memory technologies, namely, locatedness, relatedness, embodiment, orality, narrative, and imagery. These elements of cultural practice, when unified, serve the transformative function of weaving together a learner's awareness of their place, relationships, mythos, and lifeworld. The enhancement of memory is almost incidental.

It is important to note that this practice of embeddedness also ensures that this lifeworld is understood in terms of non-hierarchical, non-rivalrous dynamics. Unlike systems that categorise species in hierarchies or assign dominance based on utility, many Aboriginal kinship systems place animals, weather systems, ancestors, and people in lateral relation. A river may be spoken to as an Elder, a crow may hold a skin name, and each being has a role—not a rank—in maintaining balance. For example, in the Seven Sisters Dreaming, certain stars are not simply celestial markers but active kin whose stories govern ethical conduct, teaching young men not to pursue what must be released and reminding all people of relational restraint rather than conquest. In this sense, the animist forces serve as guides and companions. In a further instance, a child learning through the goanna songline does not simply learn the track of the animal but also how to move like it, how to listen like it, and how to relate to it without dominance or fear. The goanna is not a specimen; it is a teacher and kin.

By contrast, the western philosophical traditions historically set humans apart from non-human life forms, and some human regional groups apart from others, through an emphasis upon the incorporeal intellect of the

human being, and of classes of human being. As a consequence, the "rational soul" was stood outside and apart from the "merely corporeal" bodily world. This separation is apparent in the hierarchicalisation of life forms present in the "Great Chain of Being", a heuristic created to justify the doctrine of discovery that drove exploitative relations with both human and non-human others (Yunkaporta, 2019). It is this ontological split that enabled animals to become meat-machines in industrial systems, and that still frames land not as kin but as resource—something to be mined, fenced, sprayed, or sold. The logic that underpinned the plantation also underpins the abattoir. The same logic was eventually turned inward upon human populations. Aboriginal Australians, for instance, were not legally recognised as human beings under Commonwealth law until the 1967 referendum, previously being classified as fauna and excluded from the national census. Aboriginal Australians' perceived proximity to animality was used to justify policies of dispossession, surveillance, assimilation, and eugenics (Broome, 2010).

Elsewhere, this metaphysical division between intellect and body laid the groundwork for caste hierarchies, racialised slavery, and the calculated exterminations of the 20th century—systems in which certain bodies, deemed more material and less mind, could be processed, controlled or eliminated. This naturalised imperial, colonial, and eventually industrial disconnection from the complexity and autopoietic sentience of humans' habitat produced a diminished capacity to recognise relationality and reciprocity. As Arendt (1963) observed, in relation to the atrocities of World War II, such horrors often emerge through evil's *banality*—through disembeddedness, severed from relation to the Other, abstraction prevails and facilitates a willingness to commit atrocities impossible if we allowed ourselves to stand in relation to the Other.

In contrast, Aboriginal approaches, grounded in a co-created human and non-human lifeworld, challenge the hierarchical ontologies that have prevailed under post-industrialisation. As a consequence, Aboriginal approaches offer technologies, cultural practices, and broader relational modes that, if "retrieved forward", adapted in demotic and accessible ways, and shared more widely, may fulfil a vital ecological function: to transform our relationship with the broader, animate, more-than-human world. Such land-based spiritualities are beginning to re-emerge and are increasingly recognised as containing the seeds of alternative futures (Graham, 2014).

This resurgence challenges the 20th century's dominant conception of consciousness as merely a network of enskulled neural events, discrete and internalised within the boundaries of the human brain. In its place, a more relational and distributed view is being cultivated (Abram, 1996; Shapiro, 2010), one that fosters reciprocal exchange and meaningful interchange with the multiplicity of others—those beings, presences, and intelligences that cohabitate this universe alongside the human.

Such an exchange gives rise to a reconnection with the sensuous world, a world to be met, rather than instrumentalised. As memory is re-understood, it becomes a craft: a means of extending human awareness into relationship with the depths of the landscape, both sensuous and psychological. This is not simply knowledge about the world, but a form of shared living, a dreaming.

The question, then, is: where does this receptivity to the solicitations of the more-than-human begin? This question leads us toward the critical project of articulating an Indigenous standpoint theory, one that can stand in dialogue with, and at times in tension with, the broader fields of phenomenology and embodied cognition.

Indigenous Standpoint Theory: From Things to Ways

In the Australian context, a body of scholarship has articulated what is now referred to as Indigenous standpoint theory—a methodology rooted in Indigenous perspectives that implicitly critiques the "McDonaldisation" of Indigenous research (Foley, 2003, 2006, 2018). This critique likens institutional Indigenous scholarship to the ethos of fast-food chains: efficient, quantifiable, predictable, and standardised in its outputs. Such a model privileges informational content over process and ontological engagement. In contrast to dominant western propositional epistemologies that prioritise discrete content, Indigenous knowledge systems emphasise the relational processes through which knowledge is transmitted (Berkes & Berkes, 2009; Rundstrom, 1995).

For example, university-led research on Indigenous food practices has at times imposed rigid interview structures that overlook the importance of yarning, kinship protocols or ceremonial settings (Dei, 2000), resulting in culturally disconnected data. Such an overreliance on content-focused approaches risks tokenism and, as Foley (2018) notes, often leads to the further marginalisation of Indigenous identities within academic settings, thereby contributing to the erasure of knowledge grounded in lived, experiential realities. Alongside Foley's contributions, Nakata's (2007) work on Indigenous standpoint theory offers a critical intervention in the space between Indigenous and western knowledge systems, particularly through his concept of the "cultural interface"—the contested zone where Indigenous and non-Indigenous ways of knowing interact, collide, and co-exist.

The cognitive, relational, and embodied dimensions of Indigenous ways of knowing are often obscured by dominant western interpretive frameworks. This includes the often-overlooked ways in which law and governance are encoded within Country, story, and lived practice (A. Kwaymullina & Kwaymullina, 2010), where "reading the signs" becomes a participatory act of ongoing relational attunement rather than an abstraction. Yet such inquiry becomes enriched when brought into conversation with contemporary intellectual currents including the regenerative movement, deep ecology, and complexity science (Dowie & Tempone-Wiltshire, in press). Scholars such as Foley (2003, 2006) have argued that the contextual and situated nature

of knowledge in Indigenous science challenges the prevailing cognitivist paradigm because the holistic logic underpinning Indigenous knowledge systems resists fragmentation into isolated analytical parts, instead privileging interconnectedness, emergence, and relational process (B. Kwaymullina & Kwaymullina, 2014). In contrast to the dominant third-person empiricism of the 21st century, the contemporary shift toward embodied cognitive paradigms—such as neurophenomenology and enactivism—resonates more deeply with traditional Indigenous epistemologies and research practices.

It is for this reason that, in engaging with Aboriginal culture-shaped memory technologies, this article does not attempt to quantitatively verify their efficacy, but rather to focus on a deep characterisation of the underlying processes of knowledge transmission present in these cultural practices. Such an engagement with Indigenous ways (the how), rather than objects (the what), moves us beyond the call to objectification into a more relational and generative engagement with knowledge systems (Dowie & Tempone-Wiltshire, 2022; Yunkaporta, 2019).

Conclusion

As we have shown, Aboriginal memory practices cannot be meaningfully separated from the broader cultural and relational lifeworlds in which they are embedded. These practices are not isolated cognitive tools but are part of a broader epistemic ecology that includes story, Country, ceremony, and kinship (see also Tempone-Wiltshire, 2025, on auto-ethnographic practices of self-care and wellbeing as embedded lifeworld ecologies). While they resonate in some respects with western philosophical traditions such as phenomenology, our focus here has remained on the cultural and processual elements of Indigenous knowledge systems, particularly as they are enacted through lived relationships on Country. Further work is needed to more fully articulate the metaphysical dimensions of these systems.

Elsewhere, we explore the broader implications of the processual metaphysics underpinning Indigenous psychology, particularly as it emerges in relationship with non-ordinary states of consciousness (Dowie & Tempone-Wiltshire, 2023; Tempone-Wiltshire & Dowie, 2023a, 2023c, 2023b; Tempone-Wiltshire & Matthews, 2023, p. 2024). In those works, we examine how knowledge transmission is not only intergenerational but embedded within an ongoing relationship between land, spirit, and community—revealing the deep entanglements between culture and the ontological fabric of place. This dynamic co-existence, or living together, is not merely symbolic but constitutive of Indigenous reality. Cultural practices enacted on Country, we contend, offer a critical anchor for cultivating ways of knowing, valuing, and being that sit at the heart of Indigenous knowledge systems.

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